

AMENDMENT TO THE CLAIMS

The following claim listing replaces all prior listings and versions of the claims:

LISTING OF CLAIMS

1. (Cancelled)
2. (Previously presented) The Luneberg lens according to claim 6, wherein the inorganic filler having a high dielectric constant comprises a titanate.
3. (Original) The Luneberg lens according to claim 2, wherein the titanate is barium titanate, strontium titanate, calcium titanate, or magnesium titanate.
4. (Cancelled)
5. (Withdrawn/Previously presented) A method of producing a Luneberg lens that satisfies the requirements described in claim 6, comprising the steps of:
 - mixing a polyolefin resin and/or a derivative thereof with an inorganic filler having a high dielectric constant, the volume ratio of the polyolefin resin and/or the derivative thereof to the filler being 99 to 50:1 to 50;
 - adding a foaming agent to the resulting resin mixture and then performing pre-expansion;
 - classifying and selecting the resulting pre-expanded beads by gravity separation or size classification; and
 - forming the classified and selected pre-expanded beads into a shape.

6. (Currently Amended) A Luneberg lens having a multilayer structure containing a plurality of layers having different dielectric constants,

wherein the respective structure is produced by mixing a polyolefin resin and/or a derivative thereof with an inorganic filler having a high dielectric constant, the volume ratio of the polyolefin resin and/or the derivative thereof to the filler being 99 to 50:1 to 50, the resulting resin mixture being substantially uniformly cut to make the size of each pellet being $1/4$ or less of the wavelength of the electromagnetic wave used, adding a foaming agent to the resulting resin mixture and then performing preliminary expansion, and molding the resulting pre-expanded beads on condition that the concentration of the inorganic filler is within a range of $\pm 0.5\%$ with reference to the designed concentration;

at least a foamed dielectric layer having a dielectric constant of 1.5 or more is formed using the pre-expanded beads that have been classified by gravity separation or size classification such that $f(A)$ satisfies the expression $0.0005 \leq f(A) \leq 0.1$, where $f(A)$ is represented by the equation: $f(A) = \sigma_a / A_{ave}$, σ_a is the deviation of a gas volume fraction A_r in the foamed dielectric layer, and A_{ave} is the average of the gas volume fractions A_r s at positions in the foamed dielectric layer; and

exceeding values of sidelobe of the Luneberg lens are within 10% relative to at least one of the specified values $32-25 \log \phi$ in the first design according to EIAJ CPR-5104A and the specified values $29-25 \log \phi$ according to ITU-R recommendation.

7. (New) The Luneberg lens according to claim 6, wherein maximum gain of the Luneberg lens is at least 31.5dB and a variation of gain is within ± 0.2 dB.